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BEFORE THE BOARD OF PATENT APPEALS

AND INTERFERENCES

Paper No. 31

Application Number: 08/372,899

Filing Date: 01/17/95

Appellant(s): Masaaki Hiroki et al

Eric J. Robinson

For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed on 07/29/97.

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(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

The rejection of claims 21-31 and 34-35 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

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(9) Prior Art of Record

NUMBER	NAME	DATE
4,873,516	Castleberry	10/10/89
4,897,639	Kanayama	01/30/90
5,142,272	Kondo	08/25/92
5,408,246	Inaba et al	04/18/95
5,414,443	Kanatani	05/09/95

(10) New Prior Art

No new prior art has been applied in this examiner's answer.

(11) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

I. Claims 21-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inaba et al in view of Kanatani et al and applicants' admitted prior art or Castleberry.

As to claims 21, 26 and 31, Inaba et al teach a driving method for an electro-optical device comprising a plurality of scanning electrodes(2a); a plurality of data electrodes(2b); a light modulating layer(4) filled between the scanning electrodes(2a) and data electrodes(2b) to form a large number of pixels(see figure 7; column 1, lines 17-22 and column 2, lines 34-47) and a data signal having a plurality of pulses with a constant pulse width will be applied to a plurality of data electrodes(2b)(see figures 9 and 10). The number of pulses will be changed depending on a tone of an image to be displayed(see column 8, lines 4-9).

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Inaba et al fail to disclose a pixel consisting of a thin film transistor and fail to apply an average data signal to a data electrode.

Kanatani et al teach a driving method for an electro-optical device comprising a plurality of scanning electrodes(101); a plurality of data electrodes(102); a plurality of thin-film transistors(TFT) as a switching element for driving pixel electrodes(103); a data driver(200) for applying different half tone data signal(see column 16, lines 30-42) to data electrodes(102) and a scanning driver(300) for applying scanning signal to scanning electrodes(101)(see figure 20 and column 1, lines 23-55). It would have been obvious to have modified Inaba et al with the teaching of Kanatani et al, so to have a switch element to turn the pixel ON or OFF in a liquid crystal display(see Kanatani's column 1, lines 23-27).

Applicants' prior art teaches an average voltage which can be applied to a pixel electrode(see figure 11 and page 5, lines 21-27).

Castleberry teaches a display system for applying an average data signal to a data line(column line) after a predetermined period(a certain number of row address times)(see figures 4, 5, 7 and column 6, lines 35-56).

It would have been obvious to have modified the combination of Inaba et al and Kanatani et al with the teaching of applicants' prior art or Castleberry, so as to eliminate crosstalk in a thin film transistor matrix addressed liquid crystal display(see Castleberry's column 3, lines 29-43).

As to claims 22 and 27, Kanatani et al teach voltage values of pulses are constant(see figures 9(a)-9(f)).

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As to claims 23, 24, 28 and 29, Inaba teach a matrix display comprising a liquid crystal layer(4)(see figure 7; column 2, lines 55-63 and column 7, lines 43-55).

As to claims 25 and 30, Kanatani teaches the step of addressing a thin film transistor in a line sequence(see figure 1).

II. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inaba et al in view of Kanatani et al and (applicants' prior art or Castleberry) as applied to claim 31 above, and further in view of Kondo.

Inaba et al as modified fail to disclose ROM means for storing display data. Kondo teaches a display device comprising a display(20); a ROM(6) and a memory for storing gradation data(see figure 1; column 4, lines 45-61 and column 13, lines 33-36). It would have been obvious to have modified Inaba et al as modified with the teaching of Kondo, so the gradation data could be output from the memory when the display device needs.

III. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Inaba et al in view of Kanatani et al, (applicants' prior art or Castleberry) and Kondo as applied to claim 34 above, and further in view of Kanayama et al.

Inaba et al as modified fail to disclose a latch circuit, a flip-flop circuit and a counter. Kanayama teaches a method for a display device comprising a memory(11); a latch circuit(20); counters(PC1-PCN); a flip-flop circuits(FF1-FFn)(see figures 3, 4 and column 6, lines 10-43). It would have been obvious to have modified Inaba et al as modified with the teaching of Kanayama, since it is well known to apply a counter and logic circuits in a display for processing image data.

(12) New Ground of Rejection

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This examiner's answer does not contain any new ground of rejection.

(13) Response to argument

Appellants state that Inaba et al do not teach a plurality pulses applied during a scan period on page 7-8 of the appeal brief. The examiner disagrees with that since Inaba et al teach the limitation of "a data signal(I) contains a plurality of pulses with a constant pulse applied to a data line during addressing with a scan signal(S1)"(see Inaba's figures 9 and 10) cited in claims 21, 26 and 33.

Appellants state that Inaba et al do not disclose an average voltage of data pulse applied to one of pixel electrodes after a predetermined period on page 8 of the appeal. The examiner is in agreement. However, Castleberry has disclosed such feature(see Castleberry's figure 4 and column 6, lines 35-56).

Appellants state that Inaba et al do not disclose or suggest that the single pulses applied during the scan period shown in figure 9 should be replaced with a number of pulses on page 8 of the appeal brief. The examiner disagrees with that since Inaba et al has disclose pulse number of a data signal could be changed depending on given gradation data(see Inaba's column 7, lines 63-68 and column 8, lines 1-9).

Appellants state that Inaba et al do not disclose data signal contains a plurality of pulses having a constant pulse width on page 9 of the appeal brief. The examiner disagrees with that since Inaba et al have disclosed three different ways for providing a tone of image on a display: 1) a data signal having a constant pulse width, but different amplitudes; 2) a data signal having same

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amplitude, but different pulse width and 3) a data signal having a constant pulse width, but different number of pulses(see figures 9, 10 and column 7, lines 63-68 and column 8, lines 1-9).

Appellants state that there is no reason to combine Inaba et al with Kanatani on page 9 and 10 of the appeal brief. The examiner disagrees with that since Inaba et al and Kanatani both disclosed matrix liquid crystal displays(see Inaba's column 2, lines 63; Kanatani's column 1, lines 23-24) and it is well known in the art to apply a thin film transistor on a liquid crystal display as a switch element to turn ON or OFF a pixel(see Kanatani's column 1, lines 25-27. Therefore, it is obvious to have a thin film transistor in Inaba's liquid crystal display to control the ON or OFF operation of a pixel.

Appellants state that the patent application(07/885,637) claimed a specific signal was applied between the application of a reference signal to one address line and the application of the reference signal to the next address line and the board found the specific relationship between the application of signals to the scan and data lines and reversed the rejection of the claims in that subject matter on page 10 of the appeal brief. However, the patent application(07/885,637) has different claim subject matter and different rejection with the present application. The reason for reversing the rejection of the application(07/885,637) should not apply to the present application.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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ENDFIELD